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The IRIS BORER,

Macronoctua onusta Grote,

it's behavior and methods of control

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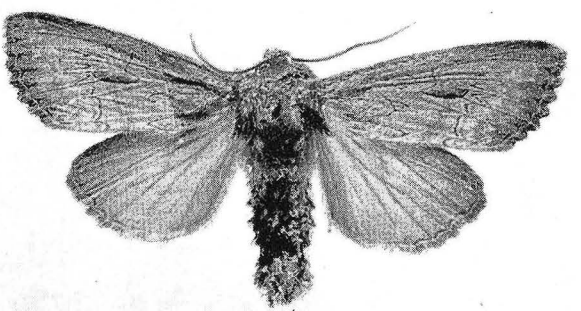

Fig. 7—The adult moth of the iris borer about natural size.

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IRIS BORER CONTROL

Garden sanitation is an important factor in iris borer control. In case of severe injury the iris clumps should be taken up in August and reset. At that time the larvae or pupae are readily observable and can be destroyed along with injured portions of rhizomes. During the late fall or early spring a thorough cleanup should be given to the iris planting in order to remove and destroy any eggs that may be present on old leaves. Strict sanitation is a good practice in iris culture whether or not an infestation was observed during the preceding year. If the re-setting of iris clumps is practiced in August and if strict sanitation is observed in the early spring iris borer injury is not likely to be severe.

Sanitation can be supplemented with properly timed sprays. The sprays should be applied soon after the eggs hatch, while the young larvae are exposed and before they enter the plant stem or rhizome. The timing of the spray seems to be more important than the material used. DDT will give good results. The writer has also had good control with lead arsenate. If the home owner is unable to ascertain the time young borers are active it would be well to start spraying in late April and repeat the application every four or five days until May 15. By that time any surviving larvae would be established within the plant and no longer susceptible to surface sprays.

The Iris Borer, Macronoctua onusta Grote, Its Behavior and Methods of Control

C. R. NEISWANDER

The iris borer, *Macronoctua onusta* Grote, frequently causes severe injury to iris plantings in Ohio. The insect attacks all parts of the plant, including the leaves, fans, flower buds and rhizomes. In instances of severe insect feeding not only do the clumps fail to produce satisfactory blooms but they are also left in a weakened condition for the following year. The injury is most pronounced in old iris plantings which are left undisturbed for several years. A severely injured clump is shown in Figure 1. As many as 32 larvae of different sizes have been taken from such a clump in mid-summer.

The feeding injury usually starts in early May soon after the eggs hatch. The young larvae can be seen crawling over the plant for the first few days, but they are negatively phototropic and soon become concealed in some part of the plant. The first injury to be seen may be

Fig. 1—Iris clump severely injured by iris borer.

slender feeding channels in the leaves somewhat resembling the burrows of leaf miners, Figure 2.

As the larvae grow they feed back of leaf sheaths and burrow into flower buds and flower stems. They gradually move downward in the plant and finally enter the rhizomes where they complete their growth. Except for the first few days of feeding the larvae are so completely concealed in the iris clump that growers never see them unless the plants are pulled apart and examined closely to find the cause of injury. However, as the larvae approach full growth the injury becomes conspicuous even if the larvae are not seen. This is particularly true if the rhizomes are destroyed and the plants tend to collapse. Severely damaged rhizomes are shown in Figure 3.

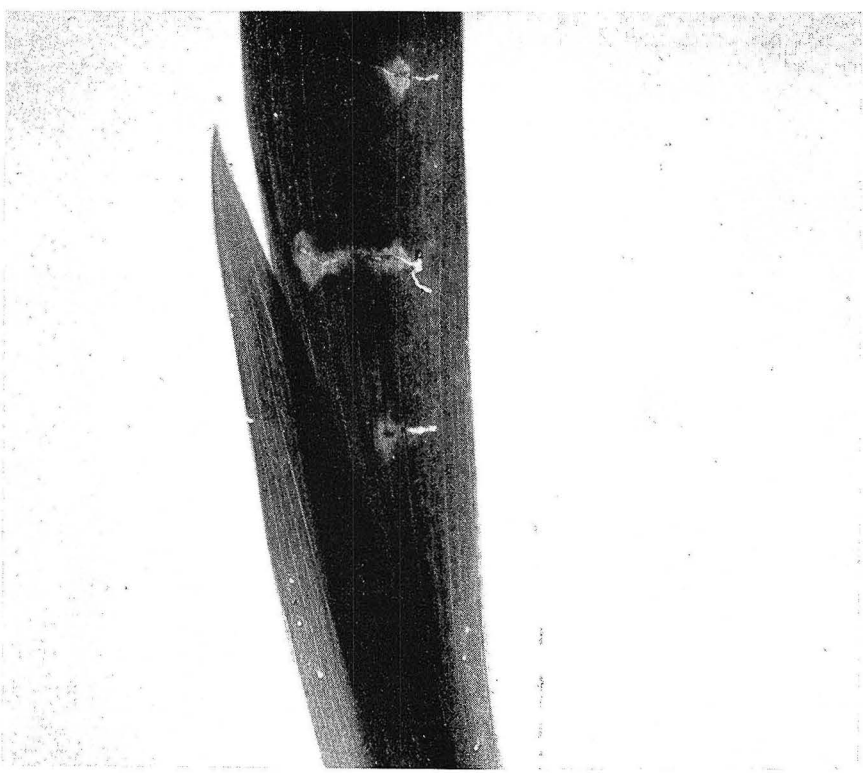

Fig. 2—This leaf showing feeding channels caused by newly hatched larvae.

LIFE HISTORY

The iris borer spends the winter in the egg stage. In late fall the eggs are deposited in groups or clusters back of leaf sheaths or in folds of dead leaves in the iris planting (Figure 4). Eggs have been observed to hatch as early as April 15 and as late as May 8. When eggs have been carried over the winter in the insectary, and have been kept under observation in the spring in cages within the iris bed they have all hatched within a day or two. However, the time of hatching has fluctuated with the earliness or lateness of the spring season.

The larvae grow rapidly and by the last of July many are full grown. Pupation may occur within the rhizome or in the soil near the

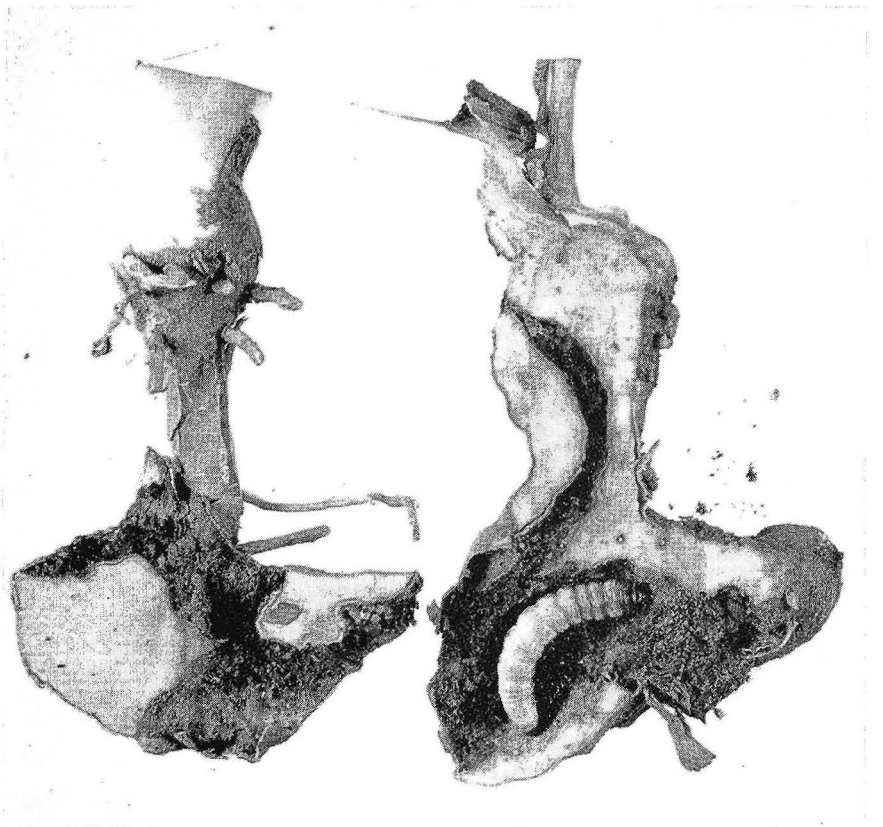

Fig. 3—Cross section of rhizomes to show characteristic injury with larva in feeding position.

rhizome. Full grown larvae and pupae are shown in Figure 5. The actual length of the pupal period was not determined but it was approximately 28 to 30 days. The date on which the earliest pupa was observed was August 4.

Moth emergence occurs in late September and early October. The earliest moth emergence observed during the period of study occurred on September 8 and the latest on October 22. On the average the males emerged a few days earlier than the females. The moth emergence

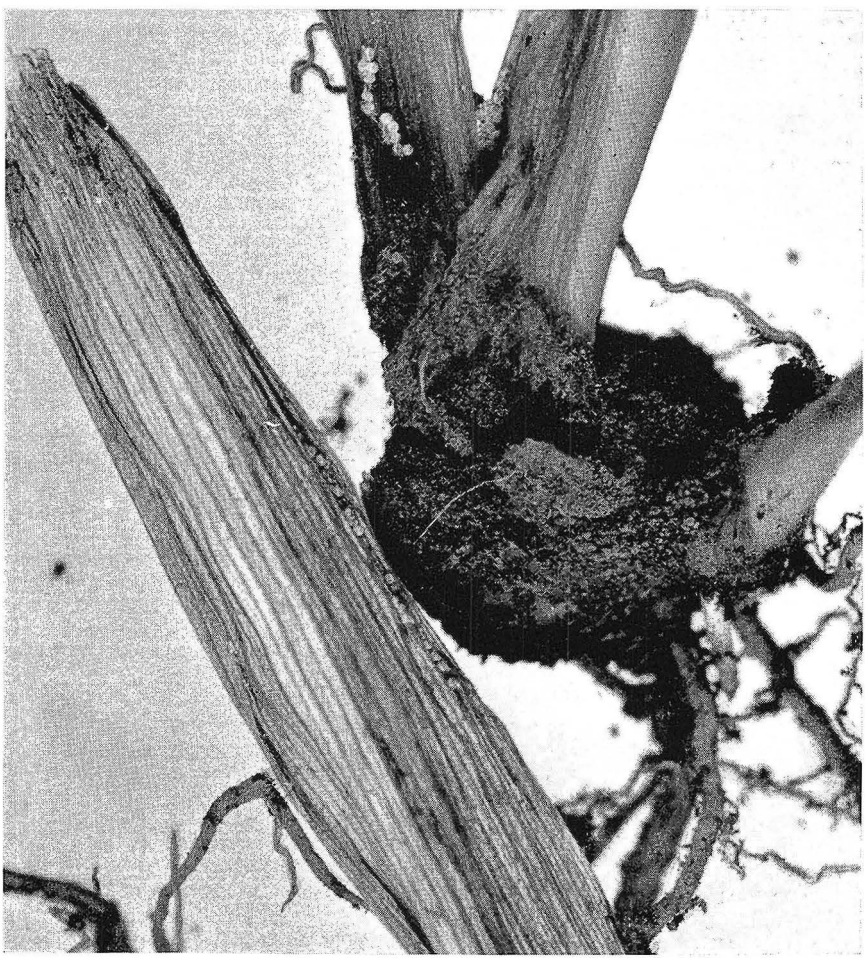

Fig. 4—Portion of iris clump showing characteristic injury to rhizome and location of eggs along margin of dead crinkled leaf and along base of stem where outer leaf has been removed.

curve is shown in Figure 6. It may be noted that the peak of emergence occurred on October 7. The adult is a large dusky brown moth with a wing spread of approximately two inches, Figure 7.

In a study of egg deposition a number of males and females were mated in gallon size battery jars covered with cheese cloth and containing soil and fragments of dead iris leaves. These mating cages were very satisfactory except that occasionally a moth would deposit eggs on the cheese cloth cover instead of placing them on crinkled leaves or leaf fragments as is the normal procedure. The data on egg deposition and length of female life are shown in Table1. The matings were made soon after emergence providing both males and females were available.

TABLE 1.—Eggs deposited per female and length of female life.

Female No.	Date of emergence	Date of death	Length of life (days)	Eggs deposited
1	9 - 23	10 - 7	14	832
2	9 - 23	10 - 13	20	1136
3	9 - 30	10 - 14	14	1328
4	9 - 25	10 - 7	12	781
5	9 - 30	10 - 14	14	1178
6	10 - 10	10 - 23	13	663
7	10 - 15	10 - 23	8	664
8	10 - 5	10 - 14	9	1954
9	10 - 4	10 - 17	13	1583
10	10 - 7	10 - 18	11	702
11	10 - 6	10 - 17	11	1392
12	10 - 13	10 - 24	11	717
13	10 - 13	10 - 24	11	718
14	10 - 5	10 - 17	12	1410
15	10 - 10	10 - 23	13	737
16	10 - 10	10 - 24	14	738
		Average	12.5	1033.3

It may be noted that 7 of the moths produced over 1000 eggs and the average from 16 moths was 1033. Inasmuch as practically all of the eggs were fertile it can be seen that only a few ovipositing moths are needed to produce a severe infestation.

During the course of this study one hymenopterous parasite was reared from a pupa of the iris borer. It emerged on October 6, 1940, and was identified by R. A. Cushman as *Amblyteles jucundus* (Brulle). This species has previously been reported as a parasite of the common stalk borer, *Papaipema nebris* Gn., as well as the iris borer.

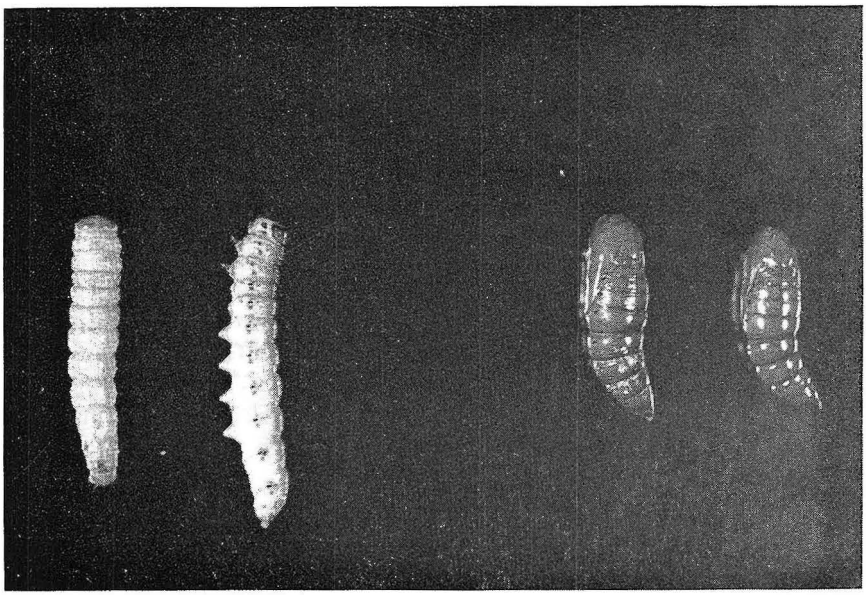

Fig. 5—Full grown larvae and pupae of the iris borer.

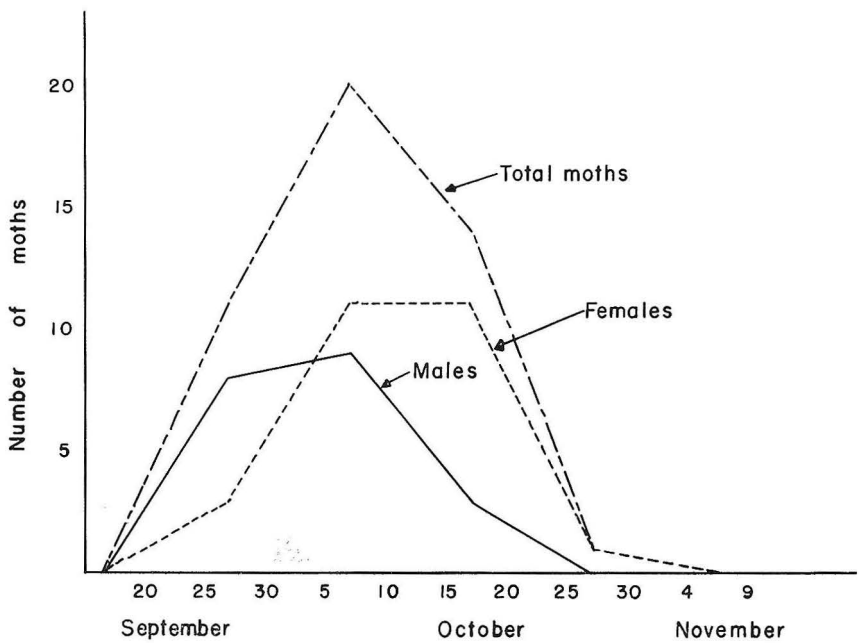

Fig. 6—Curves showing emergence period for iris borer moths.